WHAT IS CLAIMED IS:

1. A motion vector estimation method comprising the steps of:

a) obtaining a predicted motion vector on the basis of motion vectors of blocks surrounding a block to be currently coded;

b) searching for a motion vector with a minimum motion compensated error and, meanwhile, obtaining the minimum motion compensated error, a motion compensated error of a zero vector and a motion compensated error of said predicted motion vector;

c) comparing said motion compensated error of said zero vector with a first predetermined threshold value;

d) determining said zero vector as a final motion vector if it is determined at said step c) that said motion compensated error of said zero vector is smaller than said first predetermined threshold value;

e) comparing said motion compensated error of said predicted motion vector with a second predetermined threshold value if it is determined at said step c) that said motion compensated error of said zero vector is not smaller than said first predetermined threshold value;

f) determining said predicted motion vector as said final motion vector if it is determined at said step e) that said

motion compensated error of said predicted motion vector is smaller than said second predetermined threshold value; and

g) determining said motion vector with the minimum motion compensated error as said final motion vector if it is determined at said step e) that said motion compensated error of said predicted motion vector is not smaller than said second predetermined threshold value.

2. A motion vector estimation method as set forth in Claim 1, wherein said step a) includes the step of determining a median value of motion vectors of macroblocks or blocks surrounding a macroblock to be currently coded, as said predicted motion vector, using the following equation 1.

[Equation 1]

$$MVP = MED(MV1, MV2, MV3)$$

where, MV1, MV2 and MV3 represent the motion vectors of the macroblocks or blocks surrounding the macroblock to be currently coded, respectively.

3. A motion vector estimation method as set forth in Claim 1, wherein said step b) includes the step of determining the sum of absolute differences of one macroblock between a previous frame and a current frame as each of said motion compensated errors using the following equation 2.

[Equation 2]

$$SAD(x,y) = \sum_{i=0}^{15}\sum_{j=0}^{15} |p(i,j) - p(i+x, j+y)|$$

4. A motion vector estimation method as set forth in Claim 1, wherein said step b) includes the step of searching for said motion vector with the minimum motion compensated error using any one of a full search method, a pyramidal search method, a three-step search method and a four-step search method.

5. A motion vector estimation device comprising:

a motion vector predictor for obtaining a predicted motion vector on the basis of motion vectors of blocks surrounding a block to be currently coded, stored in a motion vector memory;

a motion vector searcher for searching for a motion vector with a minimum motion compensated error using a current frame and a reference frame and, meanwhile, obtaining the minimum motion compensated error, a motion compensated error of a zero vector and a motion compensated error of said predicted motion vector;

a motion vector selector for receiving said motion vector with the minimum motion compensated error, said minimum motion compensated error, said motion compensated error of said zero

vector and said motion compensated error of said predicted motion vector from said motion vector searcher, said predicted motion vector from said motion vector predictor and first and second threshold values and then determining a final motion vector using the received information; and

said motion vector memory adapted to receive and store the final motion vector determined by said motion vector selector.

6. A motion vector estimation device as set forth in Claim 5, wherein said motion vector searcher includes:

a first motion compensated error calculator for calculating said motion compensated error of said zero vector using said zero vector, said current frame and said reference frame; and

a second motion compensated error calculator for calculating said motion compensated error of said predicted motion vector using said predicted motion vector, said current frame and said reference frame.

7. A motion vector estimation device as set forth in Claim 6, wherein said motion vector selector includes:

a first comparator for comparing said motion compensated error of said zero vector from said first motion compensated error calculator with said first threshold value;

a second comparator for comparing said motion compensated error of said predicted motion vector from said second motion compensated error calculator with said second threshold value;

a first switch for enabling said second comparator or selecting said zero vector in accordance with the result compared by said first comparator; and

a second switch for selecting one of said motion vector with the minimum motion compensated error and said predicted motion vector in accordance with the result compared by said second comparator.

8. A motion vector estimation device as set forth in Claim 7, wherein said first switch is adapted to select said zero vector as said final motion vector if said result compared by said first comparator indicates that said motion compensated error of said zero vector is smaller than said first threshold value, and enable said second comparator, otherwise.

9. A motion vector estimation device as set forth in Claim 7, wherein said second switch is adapted to select said predicted motion vector as said final motion vector if said result compared by said second comparator indicates that said motion compensated error of said predicted motion vector is smaller than said second threshold value, and said motion

vector with the minimum motion compensated error as said final motion vector, otherwise.

10. A motion vector estimation device as set forth in Claim 5, wherein said motion vector predictor includes means for determining a median value of motion vectors of macroblocks or blocks surrounding a macroblock to be currently coded, as said predicted motion vector, using the following equation 1.

[Equation 1]

$$MVP = MED(MV1, MV2, MV3)$$

where, MV1, MV2 and MV3 represent the motion vectors of the macroblocks or blocks surrounding the macroblock to be currently coded, respectively.

11. A motion vector estimation device as set forth in Claim 5, wherein said motion vector searcher includes means for determining the sum of absolute differences of one macroblock between a previous frame and a current frame as each of said motion compensated errors using the following equation 2.

[Equation 2]

$$SAD(x,y) = \sum_{i=0}^{15}\sum_{j=0}^{15} |p(i,j) - p(i+x, j+y)|$$

12. A motion vector estimation device as set forth in Claim 5, wherein said motion vector searcher includes means for searching for said motion vector with the minimum motion compensated error using any one of a full search method, a pyramidal search method, a three-step search method and a four-step search method.